

Test Yourself Chapter 6 Data collection and sampling Name: _____

All Multiple Choice

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1 A census would be used to determine which of the following? D</p> <p>A The average life of car tyres.</p> <p>B The average daily temperature in Sydney over summer.</p> <p>C The most popular radio station in Sydney.</p> <p>D The average number of hours of TV watched by Year 8 students at your school.</p> | <p>4 Jack is trying to determine whether a new brand of flavoured toothpaste will be popular with parents and children. To do this Jack selects 50 households from the telephone book and conducts a survey with them. A</p> <p style="margin-top: 10px;">This is an example of:</p> <p>A random sampling</p> <p>B stratified sampling</p> <p>C biased sampling</p> <p>D a census.</p> |
| <p>2 Which of the following is an example of selecting a systematic sample? C</p> <p>A Selecting 10 names out of the telephone book by opening a page and pointing at a name.</p> <p>B Selecting 10 people who live in a certain street.</p> <p>C Selecting every 10th name on the electoral roll.</p> <p>D Selecting 10 people who attend a gymnasium.</p> | <p>5 In Year 11 there are 90 boys and 70 girls. Twelve students are to be chosen to participate in a survey. If a stratified sample is to be taken, how many boys should be chosen? D</p> <p>A 5</p> <p>B 6</p> <p>C $6\frac{3}{4}$</p> <p>D 7</p> |
| <p>3 A survey is to be conducted to determine the ratings for various television programs. D</p> <p>A survey form is handed out to every 10 000th home listed in the telephone book.</p> <p>This is an example of a:</p> <p>A census</p> <p>B random sample</p> <p>C stratified sample</p> <p>D systematic sample.</p> | <p>6 If 15% of all students study history, how many should be surveyed from a school of 1250 students, if stratified sampling is to be used, for a survey size of 50? B</p> <p>A 5</p> <p>B 8</p> <p>C 10</p> <p>D 15</p> |

- 7** Stratified sampling should be used when: **D**
- A the population cannot be divided into distinct groups
 - B a random survey is required
 - C you wish to compare the responses between the groups
 - D each group should receive fair representation.
- 8** A stratified sample is to be taken from a school on transport issues. In the school there are 645 students who walk, 327 who catch the bus and 296 who get driven to school. **A**
- The survey is to consist of 40 students. The number of bus passengers that should participate in the survey is:
- A 10
 - B 11
 - C 13
 - D 14
- 9** Which of the following questions could be said *not* to contain bias? **C**
- A It is unfair that we have to pay so much in tax isn't it?
 - B Would you agree that we pay too much tax?
 - C In your opinion, are the current tax rates fair?
 - D It is only fair that we pay the amount of tax that we do so that the government can provide for the underprivileged in our society, don't you agree?

- 10** A television current affairs program conducts a poll asking the following question. **D**

'Do you think that the government should increase the amount of dole payments?'

YES: 1902 111 111

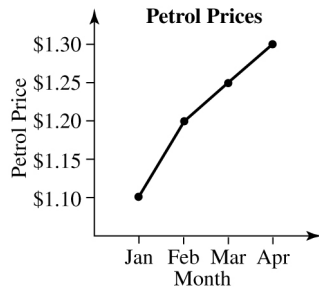
NO: 1902 222 222

*Call costs \$1.10 inc GST, higher from public and mobile phones

Which of the following statements is correct?

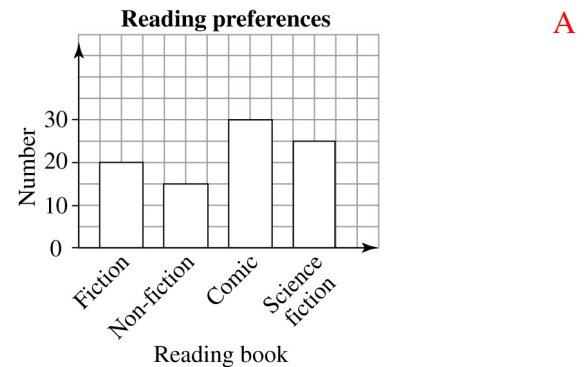
- A The question itself is free of bias.
 - B The survey will be biased because only viewers of this program will call.
 - C The survey will be biased because those who support this statement may be unable to afford the call cost.
 - D All of the above statements are correct.
- 11** Jodie wants to conduct a survey of the students in her school. In which of the following is there a sampling bias? **D**
- A Using a random number generator to select the student number of those to participate in the survey.
 - B Selecting every 20th person from an alphabetical list of the students in the school.
 - C Selecting the participants in the same proportion as the overall school population.
 - D Selecting participants to who sit in a certain area of the schoolyard at lunchtime.

- 12** The graph below shows the petrol prices over a four-month period. **B**
- Assume that over this period, petrol prices fluctuate, increasing and decreasing at different times.



The graph creates a biased visual impression because:

- A the vertical axis does not begin at 0
- B only price increases are shown and no price decreases
- C the price of petrol does not increase by the same amount each month
- D the graph does not create a biased visual impression.
- 13** Which one of the following data sets is not discrete? **B**
- A Shoe sizes of a group of Year 9 girls.
- B Mass (in kg) of Year 9 girls.
- C Number of subjects studied by Year 9 girls.
- D Age (in years) of Year 9 girls.
- 14** Data representing the amount of TV watched each day for a month can be classified as:
- A categorical and nominal
- B categorical and ordinal
- C quantitative and discrete
- D quantitative and continuous.



The data demonstrated in the above graph above is:

- A categorical and nominal
- B categorical and ordinal
- C quantitative and discrete
- D quantitative and continuous
- 15** Which of the following pieces of data can be considered to be discrete data? **C**
- A The heights, in cm, of a group of Year 11 students.
- B Dress sizes in stock at a clothing store.
- C The daily maximum temperature.
- D The types of movies that people like to watch.
- 16** Which of the following can be considered categorical and ordinal data? **C**
- A The genre of a DVD movie (for example, drama, horror, etc.)
- B The price of a DVD movie
- C The classification of a DVD movie
- D The number of sales of a DVD movie
- 17** The fish population of a lake is to be estimated using the capture–recapture method. **D**
- A sample of 100 fish is caught, tagged and released. Later, a second sample of 100 fish is caught and it is noted that 5 of the fish have tags. The estimate of the number of fish in the lake is:
- A 500
- B 1000
- C 1500
- D 2000

- 18** Every evening during summer in Cairns a colony of bats flies over the city. Conservationists are concerned that the bat population is dwindling, so the bats' nests are found, and 100 of the bats are tagged prior to their flight. When the bats land, 200 of them are captured and it is found that 4 of these bats have tags. The estimated number of bats in the bat population is: **C**
- A 2000
 - B 4000
 - C 5000
 - D 8000

- 19** A kangaroo population that is damaging a number of farms needs to be estimated, so that local farmers can apply to cull the population. A sample of 50 kangaroos are captured, tagged and released back into the population. Later, a second sample of 300 kangaroos is captured and it is found that 7 of these kangaroos have tags. The best estimate of the kangaroo population is: **B**
- A 1050
 - B 2100
 - C 3150
 - D 4200

- 20** In four lakes (A, B, C and D) the fish population is to be estimated. In each of the lakes a sample of 100 fish are caught, tagged and released. In each of the lakes a second sample of fish is caught. Which of the lakes has the greatest fish population? **A**
- A Lake A, where 200 fish were caught and 4 had tags.
 - B Lake B, where 100 fish were caught and 4 had tags.
 - C Lake C, where 200 fish were caught and 8 had tags.
 - D Lake D, where 100 fish were caught and 8 had tags.